

U.S. Fish & Wildlife Service

Fish & Wildlife Resource Conservation Priorities

Region 3

September 1999



By law and treaty, the U.S. Fish and Wildlife Service has national and international management and law enforcement responsibilities for migratory birds, threatened and endangered species, and interjurisdictional fish. The Service works with state and tribal governments, and other Federal agencies in helping protect America's fish and wildlife resources.

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Introduction and Purpose

In late 1997 a group of Region 3 employees was brought together to address the Government Performance and Results Act (GPRA). GPRA requires the U.S. Fish and Wildlife Service (Service) to identify the most important functions that it performs and to direct its limited fiscal resources toward those functions.

The Federal government, through the Service, is responsible for conserving natural resources pursuant to a complex array of treaties, Federal laws, Federal statutes, Executive Orders, judicial decisions, and other instruments. Implementation of the GPRA is highly relevant to the Service because our conservation responsibilities dwarf the Agency's budget, demanding a clear and definitive identification of our highest fish and wildlife conservation priorities.

It was immediately apparent to the group that GPRA implementation in Region 3 must be based on National and Regional Service priorities. However, except for broad direction provided by policy and law, no such guidance is available. This document was conceptualized by the GPRA group at that moment.

The Fish and Wildlife Resource Conservation Priorities table presented here identifies the 161 species considered to be in the greatest need of attention under the Service's full span of authorities. The identified strategies will contribute to the conservation, protection, and recovery of migratory birds, threatened and endangered species, and interjurisdictional fish as well as the habitats on which they depend--thus fulfilling the Service's mission.

All strategies are achievable within the context of current laws and policies although additional human and financial resources will be needed to implement some of the actions. The identified outcomes are the Region's goals and conservation of our priority fish and wildlife resources is attainable if all Service programs work together.

What Do We Mean By Priorities?

The Service may, under various circumstances, choose to apply its authorities and resources to addressing the needs of literally hundreds of species of fish, wildlife, and plants. While many species not included on the list of Resource Conservation Priorities may be of importance for various reasons, identifying priority species acknowledges the fact that a subset of the species occurring within Region 3 requires the Service's utmost attention. The fact that a species is not included in the list does NOT mean it is unimportant; it means only that when faced with the choice of addressing the needs of several species, the Service should place emphasis on those identified as priority from a Regional perspective. Many species that are not included in this document will receive incidental benefits from implementation of the strategies outlined herein.

Why Species Priorities?

The basis of the Region's Resource Conservation Priorities is fish, wildlife, and plant species, populations, and strains, i.e., species of fish, wildlife, or plant, subspecies of fish, wildlife, or plant, and distinct population segments of vertebrates that interbreed when mature. Examples of within-species distinctions from the Resource Conservation Priorities table include the Canada goose (giant population, urban giants, Southern James Bay population) and lake trout (lean and deepwater).

We recognized that there were at least two ways to approach the Service's conservation priorities - by focusing on species, or by focusing on habitat. After long debate, the group chose the species approach for several reasons.

- *First*, species represent extremely valuable biological and genetic resources that must be considered of primary importance because, once extirpated, they cannot be replaced.
- *Second*, a focus on species conservation necessitates a concurrent focus on habitat in a way that highlights the specific ecological conditions that must be maintained for species survival.
- *Finally*, only by focusing first on species assemblages and identifying those areas where their ecological needs come together can we select the few key places on the broader landscape where our limited efforts will have the greatest impact.

The species-focused approach to identifying key habitats for conserving natural resources and biodiversity is described most effectively in The Nature Conservancy's recent publication *Rivers of Life* (Master, Flack, and Stein 1998).

Program Input to the Priorities

The conservation priorities identified in this document were assembled by individuals representing each of the Service's programs from a species management perspective. While all species identified were eventually combined on a single list, the original input came primarily from three program areas through the processes described in Appendices II, III and IV. Additional information on each species group is provided in these appendices.

Uses of this Document

The basis for developing Regional Fish and Wildlife Resource Conservation Priorities was associated initially with regional GPRA planning efforts. However, identification of Region 3's resource priorities has a number of stand-alone benefits, including:

- assisting Region 3 employees in prioritizing their workloads and opportunities;
- helping to direct where in the Region we should focus application of the Service's many fish and wildlife conservation tools (authorities, programs, expertise, etc.);
- identifying research priorities and training needs;
- preparation of refuge comprehensive conservation plans and ecosystem plans; and,
- developing budgets.

Ultimately, consideration of the Region's priorities in our day-to-day activities will lead to protection, enhancement, and restoration of the most important Regional resources through the efficient and wise application of the Service's people and funding.

We anticipate that presenting our Regional Resource Conservation Priorities in a tabular format using a common set of habitat indicators, obstacles, strategies, and outcomes will facilitate analyses and interpretation of species-specific data. The definitions and codes for the Priorities table are presented in Appendix I.

With these common codes, species may be sorted by broad habitat type or ecosystem, or identification of obstacles shared by a number of species may lead to development of strategies to address several species' needs on a broad, landscape scale. These analyses and interpretations will help guide our planning and on-the-ground activities in a broader, multi-species context, which is one of the key elements of the Service's ecosystem approach.

REGION 3 FISH AND WILDLIFE RESOURCE CONSERVATION PRIORITIES
9/1/99

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
MAMMALS						
Gray wolf <i>Canis lupus</i>	GRL, MSH, UMR	Forests	Endangered, Threatened (recovering species), Tribal trust	2, 4, 6, 9, 10, 11, 12, 13	9, 10	1a, 1b, 1c, 6, 7, 8, 9, 10
Gray bat <i>Myotis grisescens</i>	OHR, OZW, UMR	Caves	Endangered	1, 2, 4, 6, 7, 9, 10, 11, 12, 13	1, 2b, 3, 7, 9, 10, 11	1a, 1b, 1c, 2b, 4, 6, 7, 8, 9, 10
Indiana bat <i>Myotis sodalis</i>	GRL, LMO, OHR, OZW, UMR	Caves, Barren lands (mines), Forests	Endangered	1, 2, 4, 6, 7, 9, 10, 11, 12, 13	1, 2b, 3, 4, 7, 9, 10, 11	1a, 1b, 1c, 2b, 4, 6, 7, 8, 9, 10
BIRDS						
Double-crested cormorant <i>Phalacrocorax auritus</i>	GRL, MSH, UMR	Lacustrine, Riverine (large rivers), Barren lands (islands), Forests (islands)	"Nuisance"	1, 3, 6, 10, 11, 13	1, 9, 10, 11	1a, 1c, 5, 7, 8, 9, 10, 11
American bittern <i>Botaurus lentiginosus</i>	GRL, MSH, UMR	Palustrine, Grasslands	Rare/declining	1, 2, 3	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Least bittern <i>Ixobrychus exilis</i>	GRL, MSH, UMR	Palustrine	Rare/declining	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Snow goose <i>Chen caerulescens</i>	LMO, MSH	Lacustrine, Palustrine	Recreational/economic value, "Nuisance"	1, 3, 4, 6, 10, 11, 12, 13	1, 3, 9, 10, 11	1a, 1c, 2a, 4, 5, 6, 7, 8, 9, 10
Canada goose - Giant population <i>Branta canadensis</i>	ARR, GRL, LMO, LMS, MSH, OHR, OZW, UMR	Lacustrine, Palustrine	Recreational/economic value	1, 2, 4, 10, 11, 12	1, 9	1a, 2a, 6, 8, 9
Canada goose - Urban giants <i>Branta canadensis</i>	GRL, MSH, OHR, UMR	Lacustrine, Palustrine	Recreational/economic value, "Nuisance"	1,3,4,10,11,12, 13	1, 3, 9, 10	1a, 2a, 5, 7, 8, 9, 10, 11
Canada goose - Southern James Bay population <i>Branta canadensis</i>	GRL, OHR	Lacustrine, Palustrine	Rare/declining, Recreational/economic value	1, 2, 4, 9, 10, 12	1, 7, 9	1a, 1c, 2a, 4, 6, 8, 9
Canada goose - Eastern Prairie population <i>Branta canadensis</i>	LMO, MSH	Lacustrine, Palustrine	Recreational/economic value	1, 2, 4, 10, 12	1, 7, 9	1a, 1c, 2a, 4, 6, 8, 9
Trumpeter swan <i>Cygnus buccinator</i>	GRL, MSH, UMR	Lacustrine, Palustrine, Riverine	Rare/declining, Recreational/economic value	1, 2, 4, 5, 9, 10	6, 7, 9	1a, 6, 8, 9, 10

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Wood duck <i>Aix sponsa</i>	GRL, LMO, LMS, MSH, OHR, UMR	Palustrine, Riverine, Forests (mature bottomland)	Recreational/economic value	1, 2, 4, 9, 10, 12	1, 7	1a, 1b, 2a, 6, 7, 8, 9
American black duck <i>Anas rubripes</i>	GRL	Lacustrine, Palustrine (shrub/scrub)	Recreational/economic value	1, 2, 4, 9, 10, 12	1, 2c, 7, 9	1a, 1b, 1c, 2a, 6, 8, 9
Mallard <i>Anas platyrhynchos</i>	GRL, LMO, LMS, MSH, OHR, UMR	Palustrine, Grasslands, Forests (mature bottomland)	Recreational/economic value	1, 2, 4, 9, 10, 12	1, 2a, 7	1a, 1b, 1c, 2a, 3a, 4, 6, 7, 8, 9
Blue-winged teal <i>Anas discors</i>	MSH, UMR	Palustrine, Grasslands	Recreational/economic value	1, 2, 4, 9, 10, 12	1, 2a, 7	1a, 1b, 1c, 2a, 3a, 4, 6, 7, 8, 9
Canvasback <i>Aythya valisineria</i>	GRL, MSH, UMR	Lacustrine, Palustrine, Riverine	Recreational/economic value	1, 2, 4, 9, 10, 12	1, 7	1a, 2a, 6, 7, 8, 9, 10
Bald eagle <i>Haliaeetus leucocephalus</i>	ARR, GRL, LMO, LMS, MSH, OHR, OZW, UMR	Lacustrine, Riverine, Forests	Threatened (recovering species), Tribal trust	1, 2, 4, 6, 7, 9, 10, 11, 13	9, 10, 11	1a, 1b, 1c, 2b, 4, 6, 7, 8, 9, 10
Northern goshawk <i>Accipiter gentilis</i>	GRL, MSH, UMR	Forests (mature upland)	Rare/declining	1, 2, 6, 9, 10, 13	1, 2a, 7, 9, 10, 11	1a, 1b, 1c, 3a, 6, 8, 9, 11
Red-shouldered hawk <i>Buteo lineatus</i>	GRL, LMS, MSH, OHR, OZW, UMR	Forests (mature upland and bottomland)	Rare/declining	1, 2, 9	1, 7, 9, 10	1a, 1b, 1c, 6, 8, 9, 11
Peregrine falcon <i>Falco peregrinus anatum</i>	GRL, MSH, OHR, UMR	Palustrine (marshes, swamps), Riverine (bars), Grasslands, Forests, Barren lands (beaches, bare rock, talus cliffs, unvegetated islands)	Endangered (recovering), Recreational/economic value	2, 4, 5, 10, 13	7, 11	1a, 1b, 2c, 6, 7, 8, 9, 10, 11
Yellow rail <i>Coturnicops noveboracensis</i>	GRL, MSH	Palustrine (wet meadow)	Rare/declining	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Black rail <i>Laterallus jamaicensis</i>	GRL, UMR	Palustrine	Rare/declining	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Piping plover <i>Charadrius melodus</i>	GRL, LMO	Barren lands	Endangered, Threatened	1, 2, 4, 6, 9, 10, 11	1, 2a, 3, 4, 7, 9, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
American woodcock <i>Scolopax minor</i>	GRL, MSH, OHR, UMR	Palustrine (wet meadow and shrub/scrub), Forests (early successional)	Rare/declining, Recreational/economic value	1, 2, 4, 9, 10, 12, 13	1, 7, 9, 10	1a, 1b, 1c, 2a, 6, 7, 8, 9
Common tern - Great Lakes pop. <i>Sterna hirundo</i>	GRL, MSH	Lacustrine, Barren lands (beaches and islands)	Rare/declining (status assessment underway)	1, 2, 4, 6, 9, 10, 13	1, 2a, 2c, 7, 9, 11	1a, 1b, 1c, 3a, 3b, 6, 8, 9
Least tern - Interior population <i>Sterna antillarum</i>	LMO, LMS, UMR	Palustrine, Barren lands	Endangered	1, 2, 4, 6, 9, 10, 11, 12, 13	1, 2c, 3, 7, 8, 9, 10	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Black tern <i>Chlidonias niger</i>	GRL, MSH, UMR	Lacustrine, Palustrine	Rare/declining (status assessment underway)	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Loggerhead shrike <i>Lanius ludovicianus</i>	ARR, GRL, LMO, MSH, OHR, OZW, UMR	Grasslands, Shrublands	Rare/declining (status assessment underway)	1, 2, 4, 9	1, 7, 9, 11	1a, 1b, 1c, 6, 8, 9
Sedge wren <i>Cistothorus platensis</i>	GRL, MSH, UMR	Palustrine (wet meadows)	Rare/declining	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Wood thrush <i>Hylocichla mustelina</i>	ARR, GRL, LMO, MSH, OHR, OZW, UMR	Forests (upland)	Rare/declining	1, 2, 9	1, 2c, 7, 9	1a, 1b, 1c, 3b, 6, 8, 9
Golden-winged warbler <i>Vermivora chrysoptera</i>	GRL, MSH, OHR	Forests (early successional), Shrublands	Rare/declining	1, 2, 9	1, 2c, 7, 9, 10	1a, 1b, 1c, 6, 8, 9
Kirtland's warbler <i>Dendroica kirtlandii</i>	GRL	Forests (coniferous)	Endangered	2, 4, 6, 7, 9, 10, 11, 13	1, 2c, 3, 6, 9, 10, 11	1a, 1b, 1c, 2b, 3a, 5, 6, 7, 8, 9, 10
Cerulean warbler <i>Dendroica cerulea</i>	GRL, LMS, OHR, OZW, UMR	Forests (mature upland and bottomland)	Rare/declining (status assessment underway)	1, 2, 4, 9	1, 7, 9, 10, 11	1a, 1b, 1c, 6, 8, 9
Grasshopper sparrow <i>Ammodramus savannarum</i>	GRL, LMO, MSH, OHR, UMR	Grasslands	Rare/declining	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Henslow's sparrow <i>Ammodramus henslowii</i>	GRL, OHR, UMR	Grasslands	Rare/declining	1, 2, 9, 10	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Dickcissel <i>Spiza americana</i>	ARR, GRL, LMO, MSH, OHR, UMR	Grasslands	Rare/declining	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Bobolink <i>Dolichonyx oryzivorus</i>	GRL, MSH, UMR	Grasslands	Rare/declining	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9
Eastern meadowlark <i>Sturnella magna</i>	GRL, OHR, UMR	Grasslands	Rare/declining	1, 2, 9	1, 7, 9	1a, 1b, 1c, 6, 8, 9
AMPHIBIANS						
Hellbender <i>Cryptobranchus allenganiensis</i>	ARR, LMS, MSH, OHR, OZW	Riverine (streams)	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
REPTILES						
Copperbelly water snake - Northern population <i>Nerodia erythrogaster neglecta</i>	GRL	Palustrine (swamps), Forests (upland, bottomland)	Threatened	1, 2, 4, 9, 10, 11, 13	1, 2a, 2c, 3, 4, 7, 8, 9, 10, 11	1a, 1c, 2b, 3a, 3b, 6, 7, 8, 9, 10
Copperbelly water snake - Southern population <i>Nerodia erythrogaster neglecta</i>	OHR	Palustrine (swamps), Forests (upland, bottomland)	Rare/declining (conservation agreements in place that will sustain population)	1, 2, 6, 9, 11, 12, 13	7, 9, 10	1a, 1b, 1c, 2b, 3a, 3b, 6, 7, 8, 9

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Lake Erie watersnake <i>Nerodia sepedon insularum</i>	GRL	Palustrine, Barren lands	Proposed (Threatened)	1, 4, 10, 13	1, 7, 10, 11	1a, 1c, 6, 7, 8, 9
Eastern massasauga <i>Sistrurus catenatus catenatus</i>	GRL, LMO, OHR, UMR	Palustrine (wet meadow), Forests (upland), Grasslands	Rare/declining (status assessment and decision on candidate elevation pending)	1, 4, 13	1, 7, 10, 11	1a, 1c, 6, 7, 8, 9
FISH						
Lean lake trout - Great Lakes population <i>Salvelinus namaycush</i>	GRL	Lacustrine (nearshore), Riverine	Rare/declining, Recreational/economic value, Tribal trust	1, 2, 4, 5, 6, 7, 8, 10, 11, 12, 13	2b, 2c, 6, 10	1a, 2a, 2c, 3a, 3b, 4, 5, 7, 8, 9
Deepwater lake trout - Lakes Michigan and Huron population <i>Salvelinus namaycush</i>	GRL	Lacustrine (deepwater)	Rare/declining	1, 2, 5, 7, 8, 9, 10, 11, 13	1, 4, 6, 10, 11	1a, 1b, 1c, 2c, 4, 5, 6, 7, 8, 9
Brook trout - Great Lakes population <i>Salvelinus fontinalis</i>	GRL	Lacustrine (nearshore), Riverine	Rare/declining, Recreational/economic value, Tribal trust	1, 2, 4, 5, 8, 9, 10, 11, 12, 13	1, 3, 4, 7, 10, 11	1a, 1b, 1c, 2a, 2c, 4, 6, 7, 8, 9
Brook trout - Inland population <i>Salvelinus fontinalis</i>	GRL, MSH, UMR	Riverine (small streams)	Rare/declining, Recreational/economic value, Tribal trust	1, 2, 5, 9, 10, 11, 12, 13	1, 2c, 4, 6, 7, 8, 10, 11	1a, 1b, 1c, 2c, 6, 7, 8, 9
Chinook salmon - Great Lakes population <i>Oncorhynchus tshawytscha</i>	GRL	Lacustrine, Riverine	Recreational/economic value	6, 8, 10, 11, 12	2b, 2c, 5, 10	3a, 4, 7, 8, 9
Coho salmon - Great Lakes population <i>Oncorhynchus kisutch</i>	GRL	Lacustrine, Riverine	Recreational/economic value	6, 8, 10, 11, 12	2b, 2c, 5, 10	3a, 4, 7, 8, 9
Lake whitefish - 1836 Ceded Territory and 1842 Ceded Territory population <i>Coregonus clupeaformis</i>	GRL	Lacustrine	Recreational/economic value, Tribal trust	1, 4, 9, 10, 12	3, 10	1a, 2a, 6, 7, 8, 9
Kiyi - Great Lakes population <i>Coregonus kiyi</i>	GRL	Lacustrine	Rare/declining	1, 2, 4, 9, 11, 13	1, 4, 11	1a, 1b, 6, 7, 8, 9
Shortjaw cisco - Great Lakes population <i>Coregonus zenithicus</i>	GRL	Lacustrine	Rare/declining	1, 2, 4, 9, 11, 13	1, 4, 11	1a, 1b, 6, 7, 8, 9

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Rainbow trout - Lake Taneycomo population <i>Oncorhynchus mykiss</i>	OZW	Lacustrine (impoundment)	Federal mitigation, Recreational/economic value	12	4	2a, 2c, 9
Lake sturgeon - Great Lakes population <i>Acipenser fulvescens</i>	GRL	Lacustrine (nearshore), Riverine	Rare/declining, Recreational/economic value, Tribal trust	1, 2, 4, 5, 9, 10, 11, 12, 13	1, 4, 7, 8, 11	1a, 1b, 1c, 2a, 2c, 6, 7, 8, 9, 10
Lake sturgeon - Inland population <i>Acipenser fulvescens</i>	GRL, LMO, LMS, MSH, OHR, UMR	Riverine	Rare/declining, Recreational/economic value, Tribal trust	1, 2, 4, 5, 9, 10, 11, 12, 13	1, 4, 7, 8, 9, 11	1a, 1b, 1c, 2a, 2c, 6, 7, 8, 9, 10
Pallid sturgeon <i>Scaphirhynchus albus</i>	LMO, UMR	Riverine (large rivers)	Endangered	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Shovelnose sturgeon <i>Scaphirhynchus platyrhynchus</i>	LMO, LMS, MSH, OHR, UMR	Riverine (large rivers)	Recreational/economic value	1, 4, 9, 10, 11, 13	3, 7, 10	1b, 2a, 6, 7, 8, 9, 10
Paddlefish <i>Polyodon spathula</i>	LMO, LMS, OHR, UMR	Riverine	Rare/declining, Recreational/economic value	1, 2, 4, 5, 9, 10, 11, 12, 13	1, 3, 7, 8, 9, 11	1a, 1b, 1c, 2a, 2c, 6, 7, 8, 9, 10
Walleye - 1836 Ceded Territory, 1837 Ceded Territory, and 1842 ceded Territory population <i>Stizostedion vitreum</i>	GRL, MSH, UMR	Lacustrine (nearshore), Riverine	Recreational/economic value, Tribal trust	10, 12	10	1a, 2a, 7, 8, 9
Yellow perch - Great Lakes population <i>Perca flavescens</i>	GRL	Lacustrine (nearshore)	Rare/declining, Recreational/economic value	1, 2, 4, 10, 11, 12, 13	1, 4	1a, 1c, 2a, 7, 8
Plains minnow <i>Hybognathus placitus</i>	LMO, UMR	Riverine (shallow channels)	Rare/declining	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Western silvery minnow <i>Hybognathus argyritis</i>	LMO, UMR	Riverine (backwaters, pools)	Rare/declining	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Arkansas darter <i>Etheostoma cragini</i>	ARR	Riverine (small creeks)	Candidate	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Crystal darter <i>Ammocrypta asprella</i>	LMO, UMR	Riverine (streams)	Rare/declining (status assessment underway)	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Eastern sand darter <i>Ammocrypta pellucida</i>	OHR	Riverine (streams, main channels)	Rare/declining (status assessment underway)	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Longhead darter <i>Percina macrocephala</i>	OHR	Riverine (pools)	Rare/declining (status assessment underway)	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Niangua darter <i>Etheostoma nianguae</i>	LMO	Riverine (streams)	Threatened	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Spotted darter <i>Etheostoma maculatum</i>	OHR	Riverine (riffles in medium to large streams)	Rare/declining (status assessment underway)	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Muskellunge - 1837 Ceded Territory and 1842 Ceded Territory population <i>Esox masquinongy</i>	GRL, MSH, UMR	Lacustrine, Riverine	Recreational/economic value, Tribal trust	10, 12	10	1a, 2a, 7, 8, 9
Neosho madtom <i>Noturus placidus</i>	ARR	Riverine (streams)	Threatened	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Scioto madtom <i>Noturus trautmani</i>	OHR	Riverine (small creeks)	Endangered	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 3, 4, 7, 9, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Ozark cavefish <i>Amblyopsis rosae</i>	ARR, OZW	Caves	Threatened	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Blue sucker <i>Cycleptus elongatus</i>	ARR, LMO, LMS, MSH, OHR, OZW, UMR	Riverine (large rivers)	Rare/declining	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Sturgeon chub <i>Hybopsis gelida</i>	LMO, UMR	Riverine (large rivers, main channels)	Candidate	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Sicklefin chub <i>Hybopsis meeki</i>	LMO, UMR	Riverine (large rivers, main channels)	Candidate	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Flathead chub <i>Hybopsis gracilis</i>	LMO, UMR	Riverine (large rivers, main channels)	Rare/declining (status assessment underway)	1, 2, 4, 5, 6, 9, 10, 11, 13	1, 4, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9
Sea lamprey <i>Petromyzon marinus</i>	GRL	Lacustrine, Riverine	"Nuisance"	1, 7, 13	2a, 6	1a, 1b, 5, 8, 9
Eurasian ruffe <i>Gymnocephalus cernuus</i>	GRL	Lacustrine, Riverine	"Nuisance"	1, 7, 13	1, 2c, 6, 9, 10, 11	1a, 3b, 5, 7, 8, 9, 10
Round goby <i>Neogobius melanostomus</i>	GRL	Lacustrine, Riverine	"Nuisance"	1, 7, 13	1, 2c, 6, 9, 10, 11	1a, 3b, 5, 7, 8, 9, 10
Bighead carp <i>Hypophthalmichthys nobilis</i>	LMO, LMS, OHR, UMR	Riverine (large rivers)	"Nuisance"	1, 7, 13	1, 2c, 6, 9, 10, 11	1a, 3b, 5, 7, 8, 9, 10
Grass carp <i>Ctenopharyngodon idella</i>	GRL, LMO, LMS, OHR, UMR	Riverine (large rivers)	"Nuisance"	1, 7, 13	1, 2c, 6, 9, 10, 11	1a, 3b, 5, 7, 8, 9, 10

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
MUSSELS						
Black sandshell <i>Ligumia recta</i>	ARR, GRL, LMS, LMO, MSH, OHR, OZW, UMR	Riverine (gravel riffles in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Clubshell <i>Pleurobema clava</i>	OHR	Riverine (gravel riffles in medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Curtis' pearlymussel <i>Epioblasma florentina curtisii</i>	OZW	Riverine (streams)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Elktoe <i>Alasmidonta marginata</i>	ARR, GRL, LMO, MSH, OHR, OZW, UMR	Riverine (gravel/mixed sand/gravel in medium sized streams)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Fanshell <i>Cyprogenia stegaria</i>	OHR	Riverine (gravel riffles in medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Fat pocketbook <i>Potamilus capax</i>	LMO, UMR	Riverine (mud/sand in large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Higgins' eye pearlymussel <i>Lampsilis higginsii</i>	UMR	Riverine (gravel/sand in medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Mapleleaf <i>Quadrula quadrula</i>	LMO, LMS, MSH, OHR, UMR	Riverine (mud/sand/gravel in medium to large rivers), Lacustrine (reservoirs)	Recreational/economic value (commercial)	10	3, 10, 11	2a, 9, 10
Monkeyface <i>Quadrula metanevra</i>	LMO, LMS, MSH, OHR, UMR	Riverine (gravel/sand in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Northern riffleshell <i>Epioblasma rangiana</i>	OHR	Riverine (gravel riffles in medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Pimpleback <i>Quadrula metanevra</i>	ARR, LMO, LMS, OHR, OZW, UMR	Riverine (mud/sand/gravel in medium to large river)	Recreational/economic value (commercial)	10	3, 10, 11	2a, 9, 10
Pink mucket pearlymussel <i>Lampsilis abrupta</i>	LMO, OHR	Riverine (gravel/sand in medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Pistolgrip <i>Tritogonia verrucosa</i>	ARR, LMO, LMS, OHR, UMR	Riverine (mud/sand/gravel in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Purple cat's paw pearlymussel <i>Epioblasma obliquata obliquata</i>	OHR	Riverine (gravel riffles in medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Rabbit's foot <i>Quadrula cylindrica cylindrica</i>	ARR, OHR, OZW	Riverine (gravel/sand in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Rock pocketbook <i>Arcidens confragosus</i>	LMO, LMS, OHR, UMR	Riverine (mud/sand pools in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Rough pigtoe <i>Pleurobema plenum</i>	OHR	Riverine (gravel/sand in medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Round pigtoe <i>Pleurobema coccineum</i>	ARR, LMO, LMS, MSH, OHR, OZW, UMR	Riverine (mud/sand/gravel in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Salamander mussel <i>Simpsonaias ambigua</i>	GRL, OHR, UMR	Riverine (mud/gravel bars in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Scaleshell mussel <i>Leptodea leptodon</i>	LMO, OHR, UMR	Riverine (mud substrate in large rivers)	Proposed (Threatened)	1, 4, 13	1, 7, 9, 11	1a, 1b, 1c, 6, 7, 8, 9
Sheepnose <i>Plethobasus cyphus</i>	LMO, OHR, UMR	Riverine (gravel/sand in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Slippershell <i>Alasmidonta viridis</i>	ARR, GRL, OHR, OZW, UMR	Riverine (sand/mud/fine gravel in creeks and headwaters)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Snuffbox <i>Epioblasma triquetra</i>	LMO, LMS, OHR, UMR	Riverine (gravel riffles in medium to large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Spectaclecase <i>Cumberlandia mondonga</i>	LMO, OHR, UMR	Riverine (boulder/cobble/gravel/sand in large rivers)	Rare/declining (range overlaps commercial harvested areas)	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 2b, 5, 6, 8, 9, 10
Threeridge <i>Amblyema plicata</i>	ARR, LMO, LMS, MSH, OHR, UMR	Riverine (mud/sand/gravel in small to large rivers and impoundments)	Recreational/economic value	10	3, 10, 11	2a, 9, 10
Washboard <i>Megaloniais nervosa</i>	LMO, LMS, OHR, UMR	Riverine (mud/sand/gravel in medium to large rivers)	Recreational/economic value	10	3, 10, 11	2a, 9, 10
White cat's paw pearlymussel <i>Epioblasma obliquata</i>	GRL, OHR	Riverine (sand/gravel in small streams and medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Winged mapleleaf <i>Quadrula fragosa</i>	MSH	Riverine (mud/sand/gravel in medium to large rivers)	Endangered	1, 2, 4, 6, 7, 9, 10, 13	1, 2a, 2b, 2c, 3, 4, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Asiatic clam <i>Corbicula fluminea</i>	LMO, OHR, UMR	Riverine	"Nuisance"	1, 7, 13	1, 2c, 6, 9, 10, 11	1a, 1b, 3b, 5, 7, 8, 9, 10
Zebra mussel <i>Dreissena polymorpha</i>	GRL, LMO, LMS, MHS, OHR, UMR	Lacustrine, Riverine	"Nuisance"	1, 7, 13	1, 2c, 6, 9, 10, 11	1a, 1b, 3b, 5, 7, 8, 9, 10
SNAILS						
Iowa Pleistocene snail <i>Discus macclintocki</i>	UMR	Forests, Barren lands	Endangered	1, 2, 4, 9, 10, 11, 12, 13	1, 3, 4, 7, 9, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Tumbling creek cavesnail <i>Antrobia culveri</i>	OZW	Riverine (streams), Caves	Candidate	1, 4, 13	1, 7, 11	1a, 1b, 1c, 6, 7, 8, 9
Glacial relict snails	UMR	Forests (algific slopes), Barren lands (talus cliffs)	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
INSECTS						
Karner blue butterfly <i>Lycaeides melissa samuelis</i>	GRL, MSH, UMR	Forests (deciduous), Barren lands (dunes)	Endangered	1, 2, 4, 5, 6, 9, 10, 11, 12, 13	1, 2b, 2c, 3, 4, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 2c, 3b, 6, 7, 8, 9, 10
Mitchell's satyr butterfly <i>Neonympha mitchellii mitchellii</i>	GRL	Palustrine (fens)	Endangered	1, 2, 4, 5, 6, 9, 10, 11, 12, 13	1, 2c, 3, 4, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 2c, 3b, 6, 7, 8, 9, 10
Hungerford's crawling water beetle <i>Brychius hungerfordi spangler</i>	GRL	Riverine	Endangered	1, 2, 4, 6, 7, 9, 10, 11, 12, 13	1, 2a, 2c, 3, 6, 7, 9, 11	1a, 1b, 1c, 2b, 3a, 3b, 5, 6, 7, 8, 9, 10
Kramer's cave beetle <i>Pseudanopthalmus krameri</i>	OHR	Caves	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
Ohio cave beetle <i>Pseudanopthalmus ohioensis</i>	OHR	Caves	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
Wabash belted skimmer <i>Macaromia wabashensis</i>	GRL, OHR	Riverine (streams)	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
Hine's emerald dragonfly <i>Somatochlora hineana</i>	GRL	Palustrine	Endangered	1, 2, 4, 5, 6, 9, 10, 11, 12, 13	1, 2 b, 3, 4, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 2c, 3b, 6, 7, 8, 9, 10
ARACHNIDS						
Pseudoscorpion (no common name) <i>Apochthonous hobbsi</i>	OHR	Caves	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
CRUSTACEANS						
Illinois cave amphipod <i>Gammarus acherodytes</i>	UMR	Riverine (streams), Caves	Endangered	1, 4, 10, 13	1, 7, 10, 11	1a, 1b, 1c, 6, 7, 8, 9

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Isopod (no common name) <i>Caecidotea filicispeluncae</i>	OHR	Caves	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
Isopod (no common name) <i>Caecidotea rotunda</i>	OHR	Caves	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
Big Creek crayfish <i>Orconectes peruncus</i>	OZW	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Bristly Cave crayfish <i>Cambarus setosus</i>	ARR	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Coldwater crayfish <i>Orconectes eupunctus</i>	OZW	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Belted crayfish <i>Orconectes harrisoni</i>	OZW	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Crayfish <i>Orconectes illinoiensis</i>	OHR	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Crayfish <i>Orconectes neglectus</i>	OZW	Riverine	Rare/declining	1, 2, 4, 6, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Williams' crayfish <i>Orconectes williamsi</i>	OZW	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Crayfish <i>Orconectes inermis testii</i>	OHR	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Crayfish <i>Orconectes kertuckiensis</i>	OHR	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Crayfish <i>Orconectes sloanii</i>	OHR	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Crayfish <i>Orconectes stannardi</i>	OHR	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Indiana crayfish <i>Orconectes indianensis</i>	OHR	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Mammoth Spring crayfish <i>Orconectes marchandi</i>	OZW	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
St. Francis River crayfish <i>Orconectes quadruncus</i>	OZW	Riverine	Rare/declining	1, 2, 4, 6, 7, 9, 10, 11, 13	1, 7, 9, 11	1a, 1b, 1c, 5, 6, 8, 9
Rusty crayfish <i>Orconectes rusticus</i>	GRL, LMO, MSH, OHR, UMR	Lacustrine, Riverine	"Nuisance"	1, 7, 13	1, 2c, 6, 9, 10, 11	1a, 1b, 3b, 5, 7, 8, 9, 10

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
PLANTS						
Decurrent false aster <i>Boltonia decurrens</i>	LMO, UMR	Forests (bottomland)	Threatened	1, 2, 4, 9, 10, 11, 12, 13	1, 3, 7, 8, 9, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Dwarf lake iris <i>Iris lacustris</i>	GRL	Barren lands	Threatened	1, 2, 4, 9, 10, 11, 12, 13	1, 3, 7, 9, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Eastern prairie fringed orchid <i>Platanthera leucophaea</i>	GRL, OHR, UMR	Palustrine, Grasslands	Threatened	1, 2, 4, 9, 10, 11, 12, 13	1, 3, 7, 9, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Fassett's locoweed <i>Oxytropis campetris</i> var. <i>chartacea</i>	GRL	Barren lands	Threatened	1, 2, 4, 9, 10, 11, 12, 13	1, 3, 7, 8, 9, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Glade (Darlington's) spurge <i>Eurphoria purpurea</i>	OHR	Forests (mixed, deciduous)	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
Hall's bulrush <i>Schoenoplectus hallii</i>	ARR, GRL, LMO, LMS, OHR, OZW, UMR	Barren lands	Rare/declining (status assessment and decision on candidate elevation pending)	1, 4, 13	1, 7, 11	1a, 1b, 1c, 6, 7, 8, 9
Hill's thistle <i>Cirsium hillii</i>	GRL	Grasslands, Forests (early- and mid-successional)	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9
Houghton's goldenrod <i>Solidago houghtonii</i>	GRL	Barren lands	Threatened	1, 2, 4, 9, 10, 11, 12, 13	1, 3, 7, 9, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Lakeside daisy <i>Hymenoxys acaulis</i> var. <i>glabra</i>	GRL	Barren lands	Threatened	1, 2, 4, 9, 10, 11, 13	1, 3, 7, 9, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Leedy's roseroot <i>Sedum integrifolium</i> ssp. <i>leedyi</i>	UMR	Grasslands, Barren lands (talus cliffs)	Threatened	1, 2, 4, 9, 10, 11, 13	1, 3, 7, 9, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Mead's milkweed <i>Asclepias meadii</i>	GRL, LMO, UMR	Grasslands	Threatened	1, 2, 4, 9, 10, 11, 13	1, 3, 7, 9, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Michigan monkey-flower <i>Mimulus galbratus</i> var. <i>michiganensis</i>	GRL	Palustrine	Endangered	1, 2, 4, 9, 10, 11, 12, 13	1, 3, 7, 9, 10, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Minnesota trout lily <i>Erythronium propullans</i>	UMR	Forests (deciduous, algific slopes)	Endangered	1, 2, 4, 9, 10, 11, 13	1, 2c, 3, 6, 7, 9, 10, 11	1a, 1b, 1c, 2b, 3b, 5, 6, 7, 8, 9, 10
Missouri bladderpod <i>Lesquerella filiformis</i>	LMO	Grasslands	Endangered (recovering species)	1, 2, 4, 9, 10, 11, 13	9, 11	1a, 1b, 1c, 2b, 6, 7, 8, 9, 10
Northern wild monkshood <i>Aconitum noveboracense</i>	GRL, OHR, UMR	Forests (algific slopes)	Threatened	1, 2, 4, 9, 10, 11, 13	1, 3, 6, 7, 8, 9, 10, 11	1a, 1b, 1c, 2b, 3a, 3b, 5, 6, 7, 8, 9, 10
Pale false foxglove <i>Agalinus skinneriana</i>	GRL, UMR	Grasslands	Rare/declining (status assessment underway)	1, 4, 13	1, 11	1a, 1b, 1c, 6, 7, 8, 9

PRIORITY SPECIES OR POPULATION	FISH & WILDLIFE SERVICE ECOSYSTEMS	HABITATS	CONCERNS	OUTCOMES	OBSTACLES	STRATEGIES
Pitcher's thistle <i>Cirsium pitcheri</i>	GRL	Barren lands (dunes)	Threatened	1, 2, 4, 9, 10, 11, 13	1, 3, 6, 7, 9, 10, 11	1a, 1b, 1c, 2b, 5, 6, 7, 8, 9, 10
Prairie bush-clover <i>Lespedeza leptostachya</i>	GRL, LMO, MSH, UMR	Grasslands	Threatened	1, 2, 4, 9, 10, 11, 13	1, 2a, 2c, 3, 6, 7, 9, 10, 11	1a, 1b, 1c, 2b, 3a, 3b, 5, 6, 7, 8, 9, 10
Running buffalo clover <i>Trifolium stoloniferum</i>	OHR, OZW	Palustrine	Endangered	1, 2, 4, 9, 10, 11, 13	1, 2a, 2c, 3, 6, 7, 9, 10, 11	1a, 1b, 1c, 2b, 3a, 3b, 5, 6, 7, 8, 9, 10
Western prairie fringed orchid <i>Platanthera praeclara</i>	LMO, MSH, UMR	Palustrine	Threatened	1, 2, 4, 6, 9, 10, 11, 13	1, 2c, 3, 6, 7, 9, 10, 11	1a, 1b, 1c, 2b, 3a, 3b, 5, 6, 7, 8, 9, 10

Appendix I - Column Definitions and Codes for the Priorities Table

FWS ECOSYSTEMS - Indicates which of the Service's ecosystems the species or population should be a priority in within Region 3. Generally, the ecosystems listed are geographic areas in which the species occurs, or could occur, in manageable numbers. Ecosystems in which the species is peripheral or transitory are not listed.

ARR - Arkansas/Red Rivers.

GRL - Great Lakes Basin.

LMO - Lower Missouri River.

LMS - Lower Mississippi River.

MSH - Mississippi Headwaters/Tallgrass Prairie.

OHR - Ohio River Valley.

OZW - Ozark Watersheds.

UMR - Upper Mississippi River/Tallgrass Prairie.

HABITATS - Indicates the primary habitats used by the species or population during some part of its life cycle. Some habitat types have modifiers that further describe preferred habitats.

Lacustrine - modifiers: nearshore, inland lakes, Great Lakes, deepwater, impoundment, reservoirs.

Palustrine - modifiers: wet meadows, fens, marshes, swamps, shrub/scrub.

Riverine - modifiers: streams (small, medium, large), rivers (medium, large), creeks, shallow channels, main channels, backwaters, pools, riffles, bars, headwaters, impoundments, boulder substrate, cobble substrate, gravel substrate, sand substrate, mud substrate.

Grasslands.

Shrublands.

Forests - modifiers: early- and mid-successional, mature, bottomland, upland, coniferous, deciduous, mixed, algific slopes, islands.

Caves.

Barren lands - modifiers: beaches, bare rock, talus cliffs, dunes, mines, islands (unvegetated).

CONCERNS - Indicates the primary reasons why the species or population is of concern to the Service. These reasons relate to biological status and legal authorities.

Endangered - modifier: recovering species.

Threatened - modifier: recovering species.

Proposed - modifiers: Endangered, Threatened.

Candidate.

Rare/declining - modifiers: status assessment underway, status assessment pending, decision on candidate elevation pending, conservation agreements in place to sustain population, range overlaps commercial harvested areas.

Recreational/economic value - modifiers: commercial.

"Nuisance".

Federal mitigation.

Tribal trust.

OUTCOMES - Indicates what the Service wants to happen to enhance the conservation of the species or population.

1. Provide key information that increases our understanding of limitations to conservation.
2. Attain and maintain stable, increasing, or recovering populations.
3. Attain and maintain appropriate population abundance and distribution of "nuisance" species.
4. Achieve population, habitat, and other objectives established in conservation plans.
5. Successfully reintroduce self-sustaining populations where previously extirpated.
6. Improve biodiversity and the balance of species assemblages.
7. Effectively control the range, population size, or impacts of invading species.
8. Effectively manage fish and wildlife disease.
9. Effectively conserve priority habitats through protection, restoration, and management.
10. Establish effective cooperative conservation activities and processes.
11. Involve the public in the development and implementation of resource conservation priorities.
12. Provide appropriate levels of public access and use.
13. Increase public awareness of and support for the species and its habitat.

OBSTACLES - Indicates the key obstacles preventing achievement of desired outcomes.

1. Inadequate information base for effective conservation.
2. Imbalanced species assemblages due to:
 - a. Predation.
 - b. Forage base.
 - c. Competition.
3. Ineffective population management through regulation of harvest or take.
4. Inability to restore populations, e. g., lack of availability of genetic material, habitat fragmentation, population isolation, etc.
5. Disease.
6. Impacts of invasive species.
7. Habitat loss or degradation.
8. Inability to restore habitat, e. g., contaminant issues.
9. Lack of public awareness or involvement in the conservation of the species and its habitat.
10. Conflicting public interests.
11. Inadequate conservation planning or action.

STRATEGIES - Indicates how the Service intends to overcome the obstacles identified as limiting the conservation of the species or population.

1. Acquisition of biological information to support conservation actions:
 - a. Population status and trends.
 - b. Habitat availability and quality.
 - c. Factors related to conservation and best management practices.
2. Direct population management:
 - a. Harvest regulation.
 - b. Protection from take.
 - c. Reintroduction to priority habitat.
3. Conservation through manipulation of species assemblages:
 - a. Management of predator/prey populations.
 - b. Management of competition.

4. Disease prevention and containment.
5. Control of invasive (“nuisance”) species.
6. Conservation of habitat through protection, restoration, and management.
7. Provision of technical assistance to initiate, augment, or redirect conservation actions.
8. Coordination, facilitation, and implementation of cooperative conservation activities involving stakeholders and partners (e. g., Federal and state agencies, tribal entities, nongovernmental organizations, industry, and private individuals).
9. Education, outreach, and public involvement in species conservation, planning, and activities.
10. Law enforcement.
11. Regulation of take through depredation and falconry permits.

Appendix II - Migratory Bird Program Input and Further Information

Migratory birds are a Trust responsibility of the U. S. Fish and Wildlife Service (Service). The Migratory Bird Treaty Act and Fish and Wildlife Conservation Act are the primary Federal laws giving the Service authority over these species. Several cooperative initiatives, including the North American Waterfowl Management Plan, Partners in Flight program, U. S. Shorebird Conservation Plan, North American Colonial Waterbird Conservation Plan, and North American Woodcock Management Plan, are actively working to conserve migratory birds and their habitats.

The Service's Strategic Plan identifies priority migratory bird species as those that are “specialized, rare, harvested, experiencing actual or perceived declines, or causing public health or depredation problems.” Of the approximately 430 species of migratory birds that occur regularly in Region 3, we are most concerned with the 36 species and populations listed in the Priorities table of this document. These fall into three groups:

- C **Rare and declining species** - Nineteen species on the Service's National List of Migratory Nongame Birds of Management Concern* are of high priority because they are exhibiting sharp and documented population declines, are rare in (but not peripheral to) the Region, and/or will likely respond positively to habitat conservation efforts. The peregrine falcon, recently delisted, is also included in this category; it will be the focus of continued monitoring and restoration efforts. An additional four Federally endangered or threatened bird species are of priority concern for reasons outlined in Appendix III.
- C **Harvested species** - This category includes the American woodcock and eight species or populations of ducks and geese that are of management importance in the Region because of their recreational value and, in some cases, declining status.
- C **“Nuisance” species** - This category includes double-crested cormorants (impacting or perceived to be impacting fish populations, aquaculture, vegetation, and other colonial waterbirds), snow geese (causing arctic habitat damage), and urban Canada geese (mostly of the giant race, causing nuisance problems).

These 36 species/populations represent ~8% of the total number of bird species occurring in the Region. **It is important to note that many bird species not on this list are important too!** Some of them will, on occasion, be the focus of management activities, and most will derive incidental benefits from conservation efforts made on behalf of the highest priority bird species because they share habitats or other life history traits with these species.

The following species (listed in taxonomic order) are on the Service's List of Migratory Nongame Birds of Management Concern*: common loon (*Gavia immer*), northern harrier (*Circus cyaneus*), upland sandpiper (*Bartramia longicauda*), yellow-billed cuckoo (*Coccyzus americanus*), barn owl (*Tyto alba*), short-eared owl (*Asio flammeus*), red-headed woodpecker (*Melanerpes erythrocephalus*), northern flicker (*Colaptes auratus*), olive-sided flycatcher (*Contopus cooperi*), Bell's vireo (*Vireo bellii*), Bewick's wren (*Thryomanes bewickii*), veery (*Catharus fuscescens*), blue-winged warbler (*Vermivora pinus*), chestnut-sided warbler (*Dendroica pensylvanica*), prairie warbler (*Dendroica discolor*), worm-eating warbler (*Helmitheros vermivorus*), Swainson's warbler (*Limnothlypis swainsonii*), Bachman's sparrow (*Aimophila aestivalis*), and field sparrow (*Spizella pusilla*). While the status of these species is not as serious or well-documented as that of the other species of management concern referenced above, they occur in manageable numbers in the Region and should be the focus of conservation efforts whenever possible. Two migratory game bird species -- northern pintail (*Anas acuta*) and lesser scaup (*Aythya affinis*) -- also fall into this category; although these species are not significant breeders in the Region, they are experiencing serious continental population declines and may benefit from conservation actions that provide for their needs when they migrate through the Region.

Assessment of bird species priorities will continue as monitoring, research, and conservation planning progress. Thus, the list of bird species contained in this document should be considered dynamic. Partners in Flight Bird Conservation Plans, the U. S. Shorebird Conservation Plan, and the North American Colonial Waterbird Conservation Plan are under development and will identify additional species priorities at the national and ecoregional levels in the near future. State agencies have designated priority species at the state level. It is important for field stations and ecosystem teams to consider these additional sources when establishing bird species priorities at a sub-regional level.

For further information on the Service's migratory bird conservation program, contact Region 3's Division of Migratory Birds (612-713-5458) or visit the following web sites:

<http://www.fws.gov/r3pao/level1/birds.htm>

<http://www.fws.gov/r9mbmo>

For management information on the species listed in this document, see:

<http://www.partnersinflight.org/birdacct.htm>

* For a copy of this publication, contact Steve Lewis, Regional Nongame Bird Coordinator, at 612-713-5473 or email steve_j_lewis@fws.gov

Appendix III - Endangered Species Program Input and Further Information

Ecological Services Operations - Endangered Species Priorities

Protecting endangered and threatened species and restoring them to secure status in the wild is a primary objective of the Service. No creature exists in isolation. All living organisms are part of a complex, delicately balanced network called the biosphere. It is composed of many ecosystems, each with its own complement of plants and animals and their biological, chemical, and geological processes and the interrelationships that characterize them. When a species becomes endangered, it indicates that something is wrong with the ecosystems we all depend on. Like the canaries used in coal mines whose deaths warned miners of bad air, the increasing numbers of endangered species warn us that the health of our environment has declined. The removal of a single species can catalyze a chain reaction affecting many others. The full significance of an extinction of a species is seldom apparent; much remains to be learned, and the long-term impacts are difficult to predict.

Under the Endangered Species Act (Act) of 1973, as amended, the Service has primary responsibility to preserve not only jeopardized life, but also the natural resources on which life depends. The condition of plant and animal species tell us how much of our world continues to support a healthy environment. More knowledge of complete ecosystems can help us to better understand and protect the requirement of all life--including the human species. The measures we take to save endangered species will help ensure that the planet we leave for our children is as healthy as the planet our parents left for us.

As of February 1999, a total of 1,180 native species have been placed on the *U.S. List of Endangered and Threatened Wildlife and Plants*. Region 3 has National lead responsibility for 37 of the 61 listed species found in the North Central Region. Lead responsibility includes facilitating conservation and recovery activities for listed, proposed, candidate, and rare/declining species, pursuant the Act, various regulations and Service policy.

Often, little is known about conserving rare species (i.e., threatened, endangered, proposed, and candidate species) and thus they are difficult to prioritize. It is even more difficult to prioritize those species that we "suspect" may warrant threatened or endangered classifications, and species of concern status. Many of the taxa currently under various degrees of consideration for listing as threatened or endangered are virtually unknown to most biologists – cave and aquatic invertebrates, beetles, snails, bryophytes, ferns, other rare plants, planaria, fungi, prairie leafhoppers, etc.

Region 3 is home to many unstudied or under-studied rare species; the nature of thousands of these species makes it impossible for the Region to satisfactorily identify which of them should be placed in the Regional Resource Conservation Priorities. Regional Species of Concern for which status assessments are currently underway and those for which a decision on candidate elevation is near completion have been identified as Resource Conservation Priorities. However, we offer field station and program supervisors the opportunity to support the process of identifying “species of concern” and conduct status assessments (according to the Endangered Species Program priorities and guidelines). These actions will provide information as to which of these species should become candidate species and simultaneously become Regional Resource Conservation Priorities. We encourage field station and program supervisors to investigate and conserve rare species that may or may not become Regional priority species, thus providing a means for important components of our Region’s biodiversity to be preserved.

All imperiled species are important. However, the following criteria were used to identify the Region’s endangered species resource priorities in the Region 3 Fish and Wildlife Resource Conservation Priorities table:

- C Listed, proposed and candidate species for which Region 3 maintains National lead responsibility.
- C Rare/declining species for which:
 - @ decisions on candidate elevation are near completion;
 - @ status assessments are currently underway;
 - @ conservation agreements are in place to implement actions that will sustain populations;
 - @ current ranges of commercially harvested species overlap widely distributed but rare/declining freshwater aquatic species' historic ranges.
- C Extant listed species, widely distributed in the North Central Region whose range overlaps commercially harvested species ranges, for which another Region maintains National lead.
- C Listed species undergoing reclassification, delisting, or post-delisting monitoring activities, for which another Region maintains National lead.

Species excluded from this list are still important. We agree with the Migratory Bird Program statements that some of these will be the focus of management activities, and most will derive incidental benefits from conservation efforts made on behalf of the priority species because they share habitats or other life history traits with them. Assessment of species priorities will be an ongoing task as monitoring, research, and conservation planning efforts continue in the Region.

Cooperative efforts among Service programs and with Federal, State, local agencies, independent organizations and individual citizens to fully implement Endangered Species program responsibilities will assist in conserving the ecosystems upon which all endangered and threatened species depend for survival:

- Ⓒ Listing, reclassifying, delisting species under the Act,
- Ⓒ Providing biological opinions to Federal agencies on their activities that may affect listed species,
- Ⓒ Enforcing species protection under the Act,
- Ⓒ Coordinating recovery activities for listed species,
- Ⓒ Providing for the protection of important habitat, and
- Ⓒ Providing grants to States to assist with their endangered species conservation efforts.

Contact the Ecological Services Program Assistant Regional Director (612-713-5350) or visit the Region 3 Endangered Species Program website @ www.fws.gov/r3pao/eco_serv/endangrd/index.html to obtain additional information.

Appendix IV - Fisheries Program Input and Further Information

Fisheries Program Description

The Region 3 fisheries program focuses on a broad variety of Federal trust species and the aquatic habitats on which these species depend. For the fisheries program, the term “Federal trust species” refers to organisms:

targeted through the Endangered Species Act; potentially impacted by Federal actions under any Federal authority within which the Service has formal review or regulatory responsibility; identified within Federal mitigation responsibilities assigned to the Service; inhabiting or migrating through interjurisdictional waters; considered nationally significant, rare or declining in range or population size, and lacking protection from non-Federal authorities; occurring on federal lands; subject to the interests of Native American governments or otherwise aligned with the Service’s tribal trust responsibilities; or covered directly or in potential under any of the approximately 29 public laws, or treaties, interstate compacts, Executive Orders, statutes, and agreements pertaining to the Service’s mission and natural resource management responsibilities.

There are approximately 1,462 species of finfish, crayfish, and freshwater mussels in North America. Several hundred of these are potentially covered under the fisheries program’s Federal trust responsibilities. These responsibilities are implemented through a large number and great variety of program components within the general categories of fish production and stocking, fish health management, fish and wildlife management assistance, aquatic nuisance species control, aquatic habitat and watershed evaluation and rehabilitation, and interagency resource management process facilitation.

There are 16 fisheries field stations in Region 3: 5 National Fish Hatcheries; 6 Fishery Resources Offices; 2 Fishery Coordination Offices; 2 sea lamprey control stations; and one fish health center.

Fisheries Program Priorities

Fisheries Program input to the Region 3 resource management priority document was completed between February and June 1998. Each aquatic resource management priority included in the Fisheries table relates directly to one or more of the six national Fishery Program priorities: ***restoration of interjurisdictional fisheries; management of interjurisdictional fisheries; recovery of endangered and threatened species; restoring depleted fish populations to preclude listing; technical assistance supporting the management of aquatic resources on Service lands; providing technical assistance in fulfillment of trust responsibilities to native American governments; and fulfilling Federal mitigation responsibilities.***

Assembling the Fisheries Species List

- C A preliminary list of aquatic resource priorities was assembled in February 1998 including species and populations of lake trout, brook trout, lake sturgeon, pallid sturgeon, paddlefish and walleye targeted in ongoing restoration, management assistance, technical assistance and tribal assistance activities of Region 3 fisheries field stations.
- C This short list was expanded to include a stronger focus on non-game fishes, freshwater mussels, aquatic nuisance species and additional fish populations such as yellow perch, muskellunge, whitefish, and rainbow trout associated with management assistance, technical assistance and Federal mitigation activities.
- C At this point the expanded list was provided to Fisheries and Ecological Services field personnel for a review from a perspective of ecological balance. Five individuals responded with recommendations to add priority non-game fishes, mussels, crayfish, and aquatic nuisance species within their geographic focus area.

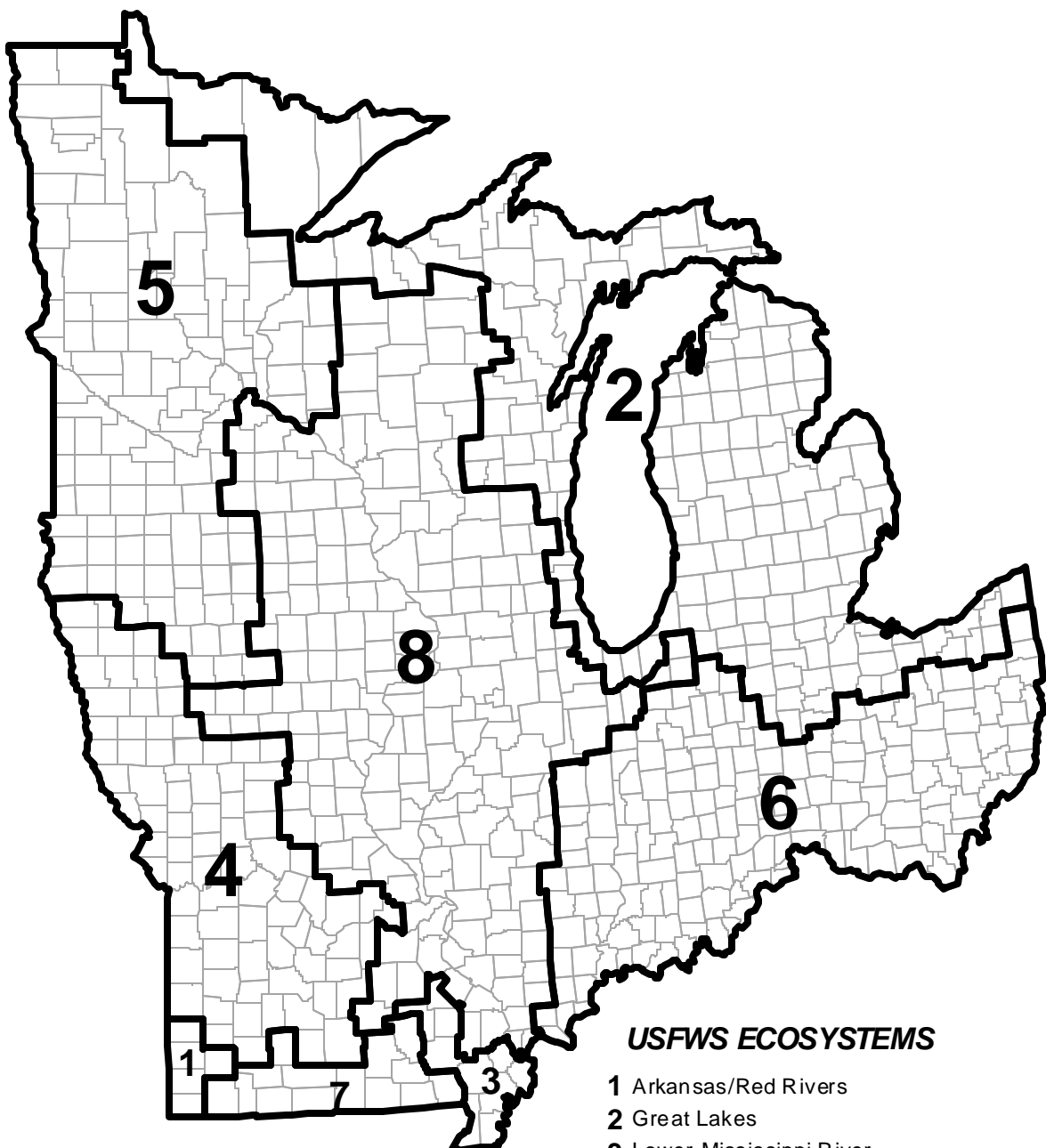
Description of the Aquatic Resource Priorities List

The aquatic priorities list presented here was prepared jointly by Fisheries (Bob Adair) and Ecological Services (Carlita Payne) using the process and input described above. It highlights a total of 80 aquatic species including: 12 harvested fishes and 4 harvested freshwater mussels; 19 non-game fishes; 23 non-game freshwater mussels; 14 crayfishes; and 8 nuisance species in three taxonomic groups.

Justifications for including these species on the priority list vary widely. Most are either targeted in interjurisdictional commercial and/or sport fisheries, targeted within restoration programs, related to Native American trust responsibilities, listed or with high potential for focus under the Endangered Species Act, widely distributed yet declining within their range, ecologically significant as a keystone species, or exotics placing significant stress on ecological systems or aquatic communities.

We believe the result is a carefully focused list of aquatic species and resource management priorities that effectively spans the Service's responsibilities and authorities while also presenting a broad ecological picture of the task at hand. In this regard the list presents the best available subset of aquatic species, among the hundreds existing in Region 3, qualified for special emphasis in Fish and Wildlife Service activities.

Contact the Fisheries Program Assistant Regional Director (612-713-5111) or visit the Region 3 Fisheries Program website at www.fws.gov/r3pao/level1/fish.htm to obtain additional information on priorities and aquatic conservation activities.



USFWS ECOSYSTEMS

- 1 Arkansas/Red Rivers
- 2 Great Lakes
- 3 Lower Mississippi River
- 4 Lower Missouri River
- 5 Mississippi Headwaters/Tallgrass Prairie
- 6 Ohio River
- 7 Ozark Watersheds
- 8 Upper Mississippi River/Tallgrass Prairie



